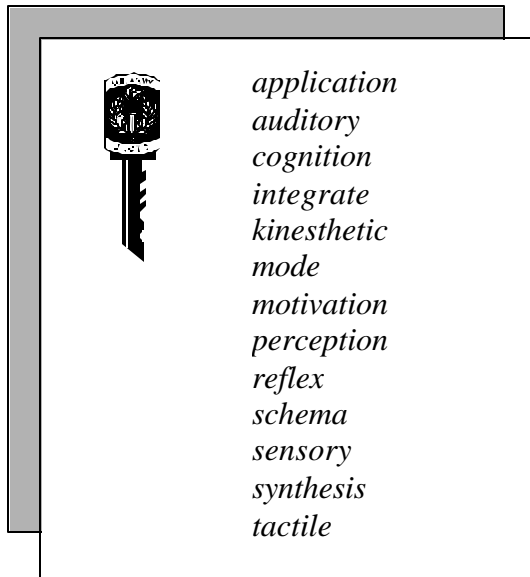


## LESSON 6: LEARNING STYLE AND PROCESSING PREFERENCES



### INTRODUCTION

People learn in different ways. Learning is a complex, interrelated system of accessing information, getting it into the brain, and processing that information to solve problems or support activities.

Learning styles describe the various ways people gather as well as process information. Each of us has a propensity for looking, listening, or touching: some read the instructions for Monopoly, others ask to hear the rules explained, still others get the dice rolling and learn as they play. Furthermore, we each have our most productive time of day, favorite chairs to sit in, and other environmental factors that help us concentrate or feel energized.

Understanding learning styles leads to success. Once you know what learning environment works best for you and what your preferred learning style is, you will see how

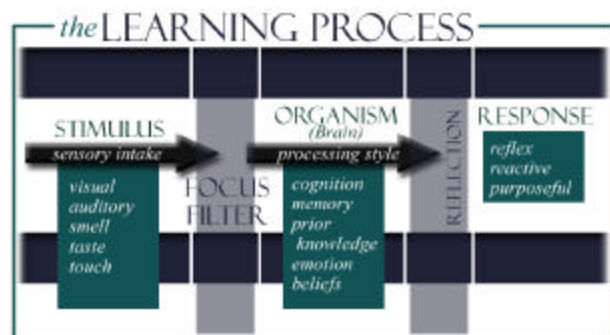
you can use your preferred learning style to move information through the learning process and to:

- Learn new information more quickly and efficiently.
- Remember new information for a longer period of time.
- Increase your ability to recall the information more quickly and completely for performance, discussion, or test taking.

### THE LEARNING PROCESS

When you learn something, you are acquiring a skill, knowledge or attitude. The process of learning involves the ability to take in data, process it, store it, and retrieve it at a later time.

Your five senses (hearing, seeing, touching, tasting, and smelling) take in stimuli from the environment. The stimuli are sub-consciously filtered, causing you to focus on some stimuli and ignore others. Those selected stimuli are sent to the brain (organism) for processing, where they are linked to prior knowledge, evaluated against your beliefs, and stored in memory. The stimuli, if encountered again, will then elicit a learned response.



If you touch a hot iron for the first time, the burning sensation is sent to your brain. The brain processes it as pain. This causes the **reflex** response of removing your hand quickly.

The learned response, however, would be to not touch the iron again.

## PREFERRED LEARNING ENVIRONMENT

Can you identify personal experiences that illustrate your preferences of a good learning environment? Can you recall times when learning frustrated you? If you examined each of those times, you would probably see that you were working outside of a preferred environment. The aspects of the learning environment that have an impact on the learning process are:

- **Sound** — Some people need it absolutely quiet in order to concentrate. Others work or study more effectively only if there is music or noise around them.
- **Light** — Too little or too much light can either inhibit or encourage learning. Many adolescents usually prefer soft or dim lights to study.
- **Design** — This refers to the formal or informal settings and furniture in the room where you study. For instance, do you use a desk or do you prefer the floor, bed, or just the chair?
- **Time of Day** — Some people are night people and others are early morning workers
- **Food Intake** — This is your need to eat, drink, or chew gum while studying or working.
- **Social Aspects** — This is your preference to work or study alone, with a partner, or in a group.

## PERCEPTUAL MODALITIES

Clearly our ability to learn is dependent upon our ability to take in, filter, select, process, and then apply new information.

We take in new information through our five senses: hearing, seeing, touching, tasting, and smelling. For most humans, three of the senses dominate our **perceptions**. *Perceive* means “to become aware of through the senses” and **mode** simply means method, route or way. Thus, perceptual modality is another term used to describe the different **sensory** channels.

Humans tend to rely on seeing, hearing, and touching as the primary methods for taking in stimuli from our environment. Of course, a physical limitation might exist that limits one of the senses and the person might have to adapt. In other mammals, dogs for example, smelling and tasting are highly developed

Learning styles are often categorized according to a person’s strongest sensory system; thus we have **auditory**, **kinesthetic/tactile** and **visual** learners.

The next lesson will explore several learning models that consider how preferences affect the learning process.

### *THE BIG THREE — AUDITORY, KINESTHETIC, AND VISUAL*

How do you gather information? What is your strongest sensory system?

**Auditory** learners are the listeners. This 30 percent of the population may need to repeat instructions, even silently, to mentally “hear” information as they commit it to memory. They learn well by discussing ideas and asking questions. They like cooperative learning and group projects.

**Kinesthetic/Tactile** learners gather meaning through touch and movement. All young children depend heavily on this strength, which is why it’s so hard to walk through an art

gallery with a small child who wants to “see” by touching. About 5 percent of the population holds onto this style throughout their adult lives, continuing to learn best through physical interaction.

About 65 percent of us are **visual** learners who gather information best by looking, reading, and watching. Visual learners may tune out spoken directions and favor illustrated explanations or charts. They “see” ideas in the mind’s eye, remembering visual details from places they’ve visited.

## ADAPTIVE SYSTEMS

With increased use, our sensory systems — and their associated neural networks in the brain — become more sensitive and are able to process data more efficiently. In turn, people are able to come up with more skilled responses. For example, not only does the concert pianist have more finely tuned abilities to hear sound than the average person, but his or her fine motor skills, and the sensitivity of their very fingertips, are increased through the growth of neuronal connections. Thus the old adage “Practice makes perfect” actually has a physical reason for being true.

The brain can also adapt to meet specialized needs when there is a physical disability or injury. For instance, a non-hearing person handles sophisticated language tasks, like storytelling, with no auditory stimulus and limited ability to speak aloud. Most of us create language by making words come out of our mouth. However, a non-hearing person is likely to tell a story by using sign language.

While some people think that each of us is born with given strengths, others believe that we develop strengths through our experiences and skill building activities. The bottom-line is that people have strengths. Being aware of your strengths allows you to leverage those strengths

to achieve your goals and increases your ability to make an informed choice to develop in key areas.

## METACOGNITION

You have the ability to bring your perceptions and processing into conscious consideration. We call this process, thinking about thinking, or **metacognition**. It is the simple process of becoming more aware.

In the learning process, metacognition can be a valuable tool for self-development. Paying attention — becoming more aware of your perceptions and thoughts and more deliberate in your choice of responses — is all part of developing as a person.

## ATTENTION AND MOTIVATION

An important component of our learning is the process of directing our **attention**. This brings us squarely into the question of **motivation**. What do we focus on, and why?

Your motivation, or personal interest is an important component of what you *consciously* choose to focus on. You may ask yourself:

- What is the “payoff” or reward?
- Are you learning for pleasure or for the avoidance of pain?
- Are you “grades” oriented or “learning” oriented?
- Are you learning to please yourself or someone other than yourself (parent, friend, teacher, officer)?

## DATA SELECTION AND ATTENTION

You have the ability to direct your attention and decide what to focus on. For the

sake of efficiency, however, these decisions are often made *subconsciously*. Lots of data comes in all the time, and we can't and don't pay attention to all of it. A lot of this data, depending on your goals, is potentially unimportant, depending on your goals, and therefore distracting. A “go or no go” signal occurs to regulate the transmission of stimuli. Thus, the sound of the air conditioner or refrigerator, many details in the visual field, traffic noise, and so on, are simply ignored in terms of conscious thought.

This physical fact reflects an important reality in the learning process. Given the billions of sensory messages taken in and processed constantly, a key activity stands out as extremely important — the ability to filter and select on what data to focus.

When some stimuli are present over a period of time, we adapt to them. *Continuing* stimuli of *constant* intensity will stop activating the receptors, in other words, we “tune out.” Think about what this means about how you learn.

If your teacher's voice drones on and on, same pitch, same tone, same type of words, your brain tends to switch off and filter that sensory input. Same thing if you keep trying to solve a problem the same way. The magic of active learning happens when you use a variety of stimuli. Even small changes can make a big difference in activating different regions of the brain.

Moving from a short lecture, to building something, to reading quietly, to talking over ideas with another student — this changes the manner in which information is taken in and processed. A mixture of activities will stimulate the brain with different types of impulses, to keep those receptors firing. Learning becomes even more activated when there are spaces in the constant data flow for quiet reflection.

## MENTAL FILTERS

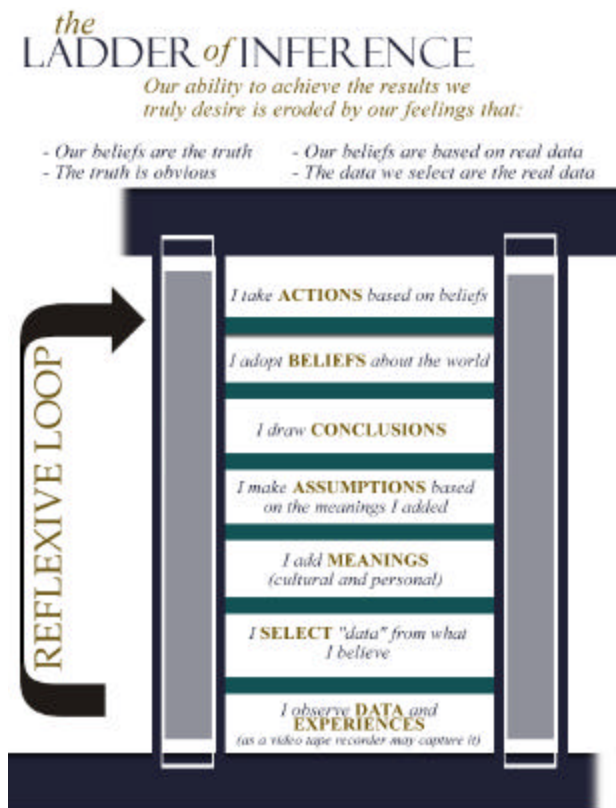
Not only is the data being absorbed, but it is also being evaluated against prior knowledge and then interpreted. Once you have gathered your selected stimuli, you group them into a cluster that you can label, so that the label makes sense to you. This helps you to know, almost without thinking about it, whether it's safe to reach out and touch the hot iron.

You have a stored set of beliefs in your memory called a **schema**. The schema is an outline of the way things are, your own representation of reality. These beliefs cause you to monitor and select the stimuli you take in and to which you pay attention. These internal models limit the data you are curious about and explore.

## LADDER OF INFERENCE

In his book, The Fifth Discipline Field Book, Peter Senge describes a type of schema called the Ladder of Inference. In this model, we begin with real data or experience (stimuli), and from that “real data” we select the data to which we pay attention. Then we attach meaning to this selected data, make assumptions, and draw conclusions. From our conclusions, we adopt beliefs about the world, which then cause us to take actions, and help determine the data that we select the next time. This mental pathway can be a slippery slope that will often lead to misguided beliefs.

For example, if you believe that a particular person doesn't like you, you tend to only see and hear those actions or statements that support your belief. This is another way you filter information.

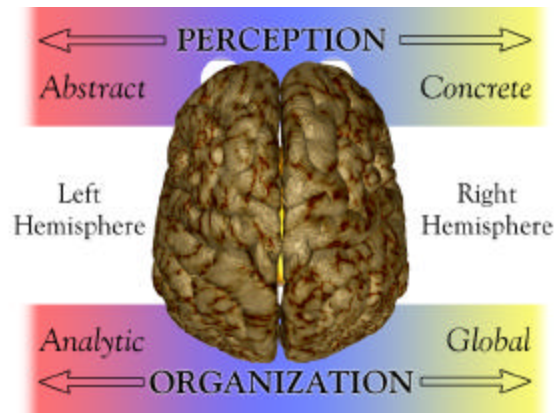


## PROCESSING STRENGTHS

In addition to the preferred input modality, there are clear differences in processing preferences. This tends to break down in alignment with the right brain and left brain specializations discussed in an earlier lesson. For example, activities involving numbers, logic, word puzzles, sequential tasks, or analysis are normally more active on the left side of the brain whereas activities involving music, imagination, colors, or creative expressions are normally more active on the right side. As you grow, you continue to develop a brain preference; that is, you will prefer activity on one side of the brain over the other.

In the diagram shown below, you can see that during the memory phase of the learning process, learning occurs in both hemispheres. That is, both sides have the ability to *perceive* information, new ideas, etc., then to

*organize* that information so that you can later recall and use it.



Thus we have **global** and **analytic** learners, in accordance with the brain's ability to focus the abilities of the left hemisphere on details and of the right hemisphere on the big picture.

In other words, besides visual, auditory, or kinesthetic intake strengths, people lean toward one of two styles for processing information: analytic (those individuals who see the individual elements most clearly) and global (those individuals who focus on the big picture).

## ANALYTIC LEARNERS

Analytic learners examine information by breaking it down bit-by-bit and arranging logically. One person's tidy suitcase displays a bent for order and sequence, as does a penchant for lists and punctuality.

An analytic learner is happiest when his or her life marches forward predictably, when he or she can follow a plan, and know the rules. Analytic learners are able to see the trees through the forest, which helps keep them (and those around them) rooted and productive.

## **GLOBAL LEARNERS**

Global learners, on the other hand, may miss a few trees, but they can surely see the forest. They organize by clustering information into groups. Their focus is drawn to the larger ideas underpinning the details; they concern themselves with the purpose behind the specifics.

Global learners can appear disorganized because of their impatience with minutiae and their willingness to jump between ideas in random ways. They'll bend rules — including schedules and deadlines — to fit what they see as a greater purpose.

We are all capable of absorbing data through any of our senses, and of processing new information in many different ways. This is a tribute to the brain's amazing adaptability and resourcefulness. Nonetheless, knowledge of our strengths and learning preferences helps us to understand our own processes, enabling us to make choices that will empower us as lifelong learners.

## **LEARNING RESULTS**

So, what are the tangible results of learning? If your parents ask, "What did you learn today?" can you answer the question accurately and completely?

The basic response to new information is to check it against what you already know, and then to either discard it, store it, or act on it. As we've discussed, you can do some of this processing unconsciously. When threatened, people can react quickly without rational thought. Detailed memories are stored of events that happen very quickly. That's why a smell or sight can trigger a memory long forgotten — the memory is stored intact, the connections are there, and the whole thing can come back in vivid detail when triggered.

It is important to be able to recall information when you need it, and to make connections between different things you've learned. These connections, linking new stimuli to prior knowledge, are called mental maps. The amazing thing is that your brain can actually improve by increasing the number of connections, and in the clarity of your internal mental maps.

These mental maps, or reference points, are among your greatest assets for taking in new data quickly and easily. You need them to have a framework, or schema, in which to store the data. Otherwise, your brain may drop data out of short-term memory without storing long term, or your brain may store information in a way that prevents access to it.

## **CONCLUSION**

The learning process enables you to acquire knowledge, skill, and attitudes. As you become more aware of how you learn, you'll be able to increase your abilities to absorb new information, and apply it in new situations. You'll also remember information longer and improve your recall ability.

Knowing how you prefer to learn and understanding how you do learn are very important aspects that can help you to succeed in school, in your employment, and in your career.